Remarks

Claims 7-15 and 17-25 are pending. Claims 1-10, 16, and 26 are currently canceled. Reconsideration of the application is requested.

Upon review of the file, it was noted that the initialed Form PTO-1449 filed with the Information Disclosure Statement dated October 15, 2007 has not been received. It is requested that the Examiner initial the Form PTO-1449, a copy of which is enclosed for the Examiner's convenience, and return it to the undersigned attorney.

The Examiner has entered the amendment of claim 7 submitted on September 11, 2007 and has withdrawn the finality of the previous Office Action pursuant to 37 CFR § 1.114. The status indicator for claim 7 has been changed and is presented as "previously presented" in the above claim listing.

Claims 7-15 and 17-25 stand rejected under 35 USC 102(b) as purportedly being anticipated by U.S. Patent No. 4,654,255 (Kojima), and claims 7-15 and 17-25 stand rejected under 35 USC 103(a) as purportedly being obvious over Kojima.

Applicants respectfully traverse these rejections for at least the following reasons. Current claim 7 is to an acrylic-based thermally conductive composition comprising a binder component that comprises a thermally conductive filler, and a polymer consisting essentially of a crystalline acrylic polymer with an alkyl group of 18 carbons or more. In the Office Action of January 3, 2008, the Examiner noted that while the Kojima reference does teach the additional monomers comprising the polymer of Kojima, the Applicant has not clearly illustrated on the record how the presence of the additional monomers in the polymer would affect the basic and novel characteristics of the claimed composition.

According to MPEP § 2111.03, when an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," the applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention.

Kojima uses adhesive resins obtained by reacting 100 parts by weight of an epoxy group-containing olefin polymer with 0.01 – 10 parts by weight of at least one ethylenically unsaturated fatty acid or derivative, thereof (see col. 2, lines 3-9 of Kojima). Furthermore, Kojima teaches that the epoxy group-containing olefin polymer used in may be copolymers of olefins and

unsaturated glycidyl group-containing monomers, and terpolymers or multi-polymers of olefins, unsaturated glycidyl-group containing monomers and ethylenically unsaturated monomers. The olefins in the copolymers should preferably be ethylene, and preferably copolymers consist of 10-99.96 wt% ethylene, 0.05-15 wt% of a glycidyl group-containing monomer, and 0-49.95 wt% of an ethylenically unsaturated monomer. (See, e.g., col. 2, lines 23-33 of Kojima). Please note that there is at least 10 wt% ethylene in Kojima's copolymers (emphasis added).

Applicants' claim 7 comprises a polymer consisting essentially of a crystalline acrylic polymer with an alkyl group of 18 carbons or more. Applicants' note in the specification that olefins change the basic and novel characteristics of Applicants' invention. For example, starting on page 16, line 21 of Applicants' specification as filed displays data from Example 12 and Comparative Example 3. As shown in Table 2 on page 17 Example 12 is made up of partially polymerized polymer I (40 wt%) and ODA (60 wt%). Partially polymerized polymer I is described starting on page 11, line 28 of the specification and is a UV polymerized partially polymerized polymer of 2-ethylhexyl acrylate of about 1000 centipoise viscosity. The "adhesive composition" of Comparative Example 3 is made of 75 wt% paraffin wax and 25% polyisobutylene. These are ethylene-like materials with no acrylic content. Quoting from page 17, line 11 of the specification, "From table 2, one can conclude that the thermally conductive sheet of the present invention in Example 12 showed a low thermal resistance and good releasability after service. On the other hand, the thermally conductive sheet in Comparative Example 3 in which wax was used as a binder component could not be released after service." Thus, Applicants have shown that olefins have a detrimental effect on the basic and novel characteristics of the invention. Kojima has 10-99.96 wt% ethylene, which would change the basic and novel characteristics required by Applicants' claim 7 and therefore is excluded through the use of "consisting essentially of."

For at least this reason, the rejection of claim 7 under 35 USC 102(b) is improper and should be withdrawn. Claims 8-15 and 17-24 all ultimately depend upon claim 7 and add further limitations thereto. Since claim 7 has been shown to be patentable, claims 8-15 and 17-24 are likewise patentable. Applicants respectfully request allowance of claims 7-15 and 17-24.

§ 102 Rejections

Claims 7-9, 15, 17-19 and 25 stand rejected under 35 USC § 102(b) as purportedly being anticipated by Tatsuo et al. (JP 2002-308919). The Examiner asserts that Tatsuo teaches an adhesive acrylic resin composition which is comprised of an acrylate monomer, a drying oil, organic peroxide, and an accelerator which can be sandwiched between two layers. The reference shows that the acrylate monomer can be stearyl methacrylate. The Examiner has further asserted that the composition can further be made thermally conductive by the addition of thermally conductive filler.

Applicants respectfully traverse this rejection for at least the following reason. Paragraph [0010] of the machine translation of Tatsuo states that the drying oil is a component required in order to use the acrylic resin constituent of this invention as soft resin. Paragraph [0011] teaches, and one of ordinary skill in the art would know, that drying oils require oxygen to crosslink the resins that they are added to. This is well known, for example, in the paint industry using alkyd-based paints. In paragraph [0022] it is taught that drying oil is hardened in response to the effect of the oxygen in a polymerization initiator. Paragraph [0023] teaches that drying oil is used in desirable loadings of 3 to 20 parts mass (maybe below 30 parts depending on the machine translation) to 100 mass parts of acrylic ester monomer.

Applicants' claim 7 comprises a polymer consisting essentially of a crystalline acrylic polymer with an alkyl group of 18 carbons or more. The polymer preferably has a melting point higher than room temperature (see page 4, line 8-9 of the specification) Furthermore on page 7, line 14 the Applicants' specification as filed teaches that the acrylic thermally conductive composition can be produced by mixing a (meth)acrylate monomer (including crystalline acrylic monomer) and a thermally conductive filler and partially polymerizing the mixture by thermal polymerization, ultraviolet polymerization, electron beam polymerization, γ-ray polymerization and ionizing irradiation (see page 7 lines 20-26). It is well known to those skilled in the art of acrylic free radical polymerization that oxygen inhibits polymerization and thus needs to be excluded from such reactions. One of skill in the art would most likely perform such polymerization by excluding oxygen under a nitrogen or argon blanket in order to obtain crystalline acrylic polymers that have a melting point higher than room temperature (see page 4, lines 8-10 of the specification). In contrast, Tatsuo teaches acrylic resin systems that require

drying oils. Drying oils use oxygen to crosslink. One of skill in the art would know that oxygenated drying oils would inhibit acrylic polymerization and produce low molecular weight, soft, polymers as desired by Tatsuo. The objective of Tatsuo is to make a soft acrylic resin composition that has an elongation of 200% or more at 20°C (see abstract) and have a glass transition point of 0°C or less. Furthermore, since the acrylic resins of Tatsuo have a glass transition point, one of skill in the art knows that they do not appreciably crystallize or else they would have a melting point.

For all of these reasons, the drying oil of Tatsuo is excluded from Applicants' claim 7 since Applicant has shown that drying oils make a soft, low glass transition point (below 0°C) resin by inhibiting polymerization. In contrast, Applicants' claim 7 claims acrylic crystalline polymers that have melting points above room temperature and are made by free-radical polymerization of acrylic monomers without oxygen. Accordingly, Applicants have shown that drying oils would cause a material change in the basic and novel characteristics of the invention and are therefore excluded from Applicants' claim 7. Accordingly the rejection of claim 7 is improper and should be withdrawn.

Claims 8-9, 15, 17-19, and 25 all ultimately depend upon and add further limitations to claim 7. Since claim 7 is patentable for the reasons described above, likewise claims 8-9, 15, 17-19, and 15 are patentable. The rejection of claims 7-9, 15, 17-19 and 25 under 35 USC § 102(b) as being anticipated by Tatsuo et al. has been overcome and should be withdrawn.

In view of the above, it is submitted that the application is in condition for allowance. Examination and reconsideration of the application is requested.

Respectfully submitted,

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